INFORMATION SHEET

ORDER NO. R5-2005-___
NPDES NO. CA0084255
LINCOLN CENTER ENVIRONMENTAL REMEDIATION TRUST
GROUNDWATER TREATMENT SYSTEM
SAN JOAQUIN COUNTY

BACKGROUND INFORMATION

As part of a settlement of legal proceedings in the United States District Court, Eastern District of California, the Lincoln Center Environmental Remediation Trust (Discharger) was created to manage environmental remediation activities at the Lincoln Center Site in the city of Stockton, San Joaquin County, California. The Discharger owns and operates a ground water extraction and treatment system to remove volatile organic compounds (VOCs), petroleum products, and lead from ground water. The treatment system is designed for a flow 430,000 gpd (0.43 mgd) of extracted groundwater, and operates at an average flow of 0.25 mgd. The Discharger submitted a Report of Waste Discharge, dated 14 February 2003, and applied for a permit renewal to discharge waste under the National Pollutant Discharge Elimination System (NPDES). Supplemental information was submitted on 6 February 2004.

Influent to the treatment unit consists of extracted/purged groundwater, drilling fluids, equipment decontamination fluids, as well as investigation derived residual fluids generated during the ongoing investigation, remediation, and monitoring activities. The influent will be treated by air stripping and granular activated carbon and discharged to a storm drain in the City of Stockton. Activated carbon of the treatment unit will be either regenerated or disposed of off-site.

Based on historical monitoring data, pollutants of concern in the influent groundwater to the treatment system that were addressed under the previous Order 99-012 include tetrachloroehtylene (PCE), trichlorethylene (TCE), cis-1,2-dichloroethylene (DCE), methylene chloride, 1,2-dichloroethane (1,2-DCA), benzene, toluene, xylene, ethylbenzene, lead and methyl tertiary-butyl ether (MTBE). The treatment unit is designed and operated to remove these constituents to non-detectable concentrations.

RECEIVING WATER AND BENEFICIAL USES

Effluent from the treatment unit is discharged to the storm sewer system that is owned and operated by San Joaquin County. The storm sewer system discharges to the Fourteen Mile Slough. Fourteen Mile Slough is part of the Sacramento-San Joaquin Delta (Delta). The beneficial uses of the Delta as identified in Table II-1 of the Basin Plan are domestic and municipal supply (MUN), agricultural supply irrigation and stock watering (AGR), industrial service supply (IND), industrial process supply (PRO), water contact recreation (REC-1), non-contact water recreation (REC-2); navigation (NAV); warm freshwater habitat (WARM), cold freshwater habitat (COLD), migration of aquatic organisms (MIGR), spawning (SPWN), and wildlife habitat (WILD).

RECEIVING WATER QUALITY, 303D LISTED CONSTITUENTS

CWA Section 303(d) addresses waters that have not attained the CWA national goal of "fishable, swimmable" by requiring states to identify these impaired water bodies and develop total maximum daily loads (TMDLs) for them, with oversight from USEPA. A TMDL is a quantitative assessment of water quality problems, contributing sources, and load reductions or control actions needed to restore and protect bodies of water.

Fourteen Mile Slough is within the Eastern Portion of the Delta that is listed as an impaired water body pursuant to Section 303(d) of the CWA. The list of pollutants for which the Sacramento-San Joaquin Delta (eastern portion) are impaired appears on a list (the "California 303(d) List"), which was updated in 2002 and approved by the State Board in February 2003. Pollutants identified on the California 303(d) List as impairing are: chlorpyrifos, DDT, diazinon, Group A Pesticides, mercury and unknown toxicity. Requirements of this Order address these constituents.

REASONABLE POTENTIAL ANALYSIS (RPA)

The Discharger received a letter on 10 September 2001 from the Central Valley Regional Water Quality Control Board (Regional Board) Executive Officer (EO) under the authority of CWC 13267 directing it to conduct a water quality monitoring study to determine if its discharge contains pollutants that are or may be discharged at levels that will cause or have a reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. The Discharger submitted a schedule to conduct this study between 2003 and 2004, submitting its final report on 15 May 2004.

The discharger conducted four sampling events on 29 May 2003, 7 October 2003, 3 December 2003 and 18 February 2004. Samples were collected of the effluent from the treatment system and the receiving water and analyzed for all CTR and non-CTR constituents as directed by the 13267 letter. A Reasonable Potential Analysis (RPA) in accordance with the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the SIP) for CTR constituents, and the *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001) (TSD) for non-CTR constituents was conducted on the data to determine whether the discharge will cause, have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs the Regional Board finds that the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for the following CTR constituents: arsenic, copper, hexavalent chromium (chromium VI), lead, mercury, zinc, bis(2-Ethylhexyl) phthalate (DEHP), 4-4-DDT (DDT), 4-4-DDE (DDE), 4,5-DDD (DDD) and Delta-BHC, and for the following non-CTR constituents: barium, iron, manganese, chloride, ammonia, specific conductance, sulfate and total dissolved solids (TDS). Table 1 of Attachment D provides a summary of the water quality criteria used to determine the reasonable potential for these constituents. Table 2 of Attachment D provides a summary of the results of the RPA for CTR

constituents and Table 3 of Attachment D provides a summary of how the projected maximum effluent concentration (MEC) was calculated for non-CTR constituents for use in the RPA.

EFFLUENT LIMITATIONS

Final Effluent Limitation Calculations:

Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. When the Regional Board determines there is reasonable potential for a constituent but data are insufficient to calculate an effluent limit the Regional Board will establish interim requirements, including monitoring, for the constituent and shall reopen an order as needed to establish final effluent limits pending the analysis of the data collected through the interim requirements.

As discussed in the Findings of this Order, final effluent limitations and interim effluent limits, when applicable, are being implemented through this Order for constituents determined to have either reasonable potential to cause or contribute to an exceedance of an applicable water quality criteria or those detected in concentrations in the receiving water that exceed applicable water quality criteria. The discussions contained in the applicable findings provide the justification and bases for the Regional Board's action. The following are intended to supplement the information in the findings.

Priority Pollutants:

For Priority Pollutants a Reasonable Potential Analysis (RPA) was conducted in accordance with either the SIP or the *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001) (TSD). The USEPA adopted the NTR and the CTR, which contains water quality standards applicable to this discharge and the SIP contains guidance on implementation of the NTR and CTR. As noted in Section 1.1 of the SIP, "Designated beneficial uses to which (federal) aquatic life criteria or objectives would apply include, but are not necessarily limited to warm freshwater habitat (WARM), cold freshwater habitat (COLD), and estuarine habitat (EST). Designated beneficial uses to which (federal) human health criteria/objectives would apply include, but are not necessarily limited to, municipal and domestic supply (MUN) and water contact recreation (REC-1)." Section 1.3 of the SIP requires a water quality based effluent limitation when the maximum effluent concentration (MEC) or observed maximum receiving water background concentration (B) of a priority pollutant exceeds an appropriate CTR/NTR pollutant criterion or more stringent criterion as described in Section 1.1 of the SIP. When considering other pollutant criteria outside the CTR/NTR and scope of the SIP, the Regional Board has considered that the TSD recommends a water quality-based effluent limit when the projected MEC exceeds an applicable and appropriate pollutant criterion.

Final water quality-based effluent limitations have been established for arsenic, copper, chromium VI, lead, mercury, zinc, DDT, DDE, DDD and Delta-BHC. These limitations were calculated in accordance with procedures established Section 1.4.B steps 1 through 7 of the SIP.

Non-CTR Pollutants

For non-priority pollutants, the RPA was conducted in accordance with the *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001) (TSD). For each pollutant, a projected MEC was determined by multiplying the maximum observed effluent concentration in the data set by a reasonable potential multiplying factor that accounts for statistical variation. The multiplying factor (for 99% confidence level and 99% probability basis) was dependent on the coefficient of variation (CV) and number of reported effluent sample results. This projected MEC was then compared to the appropriate water quality criterion. Based upon this RPA, final water quality-based effluent limitations have been established for barium, iron, manganese, ammonia, and specific conductance. These limitations were established in accordance with procedures established in Chapter 5 of the TSD.

30-day Median vs. Monthly Median

Order 98-062 established technology-based 30-Day Median and Daily Maximum effluent limitations. During the term of Order 98-062 Regional Board staff and the Discharger interpreted the 30-Day Median as a monthly median to determine compliance with effluent limitations. Effluent limitations contained in Order 98-062 were established based on the groundwater treatment system's capability to remove pollutants from groundwater to non-detectable concentrations. In accordance with Section 2.4.5 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP), when a data set contains one or more non-detect value compliance determinations shall be based on the monthly median. The SIP approach is consistent with the approach taken by staff to evaluate compliance with Order 98-062. To ensure consistency with the SIP and Order 98-062, this Order establishes Monthly Median limitations for VOCs regulated by the previous Order 98-062, and Monthly Average and Daily Maximum effluent limitations for all other constituents.

Mass-based Limitations

All mass-based effluent limitations are calculated using the following equation:

$$X\frac{\mu g}{l}\times 10^{-3}\frac{g}{\mu g}\times Flow\frac{mgals}{day}\times 8.34 = Y\frac{lbs}{day}$$

or

$$X\frac{mg}{l}\times Flow(mgd)\times 8.34 = Y\frac{lbs}{day}$$

where

X = Concentration-based Effluent Limitation
Y = Mass-based Effluent Limitation
Flow = million gallons per day

Technology-Based Effluent Limitations

Previous Order 98-062 established technology-based effluent limitations for PCE, TCE, DCE, methylene chloride, 1,2-DCA (hereafter referred to as volatile organic compounds (VOCs)), total VOCs, benzene, toluene, ethylbenzene, xylene, BETX, total petroleum hydrocarbons (TPH) and MTBE.

VOCs, total VOCs, benzene, toluene, ethylbenzene, xylene, BETX and TPH – Previous Order 98-062 Order implemented technology-based limits for these constituents that are protective of water quality; therefore, this Order carries over these effluent limitations. Justifications for this action are provided in the Findings of this Order.

MTBE – The previous Order 98-062 established a technology-based limit of 35 µg/l (monthly average) for MTBE. Based on monitoring data submitted by the Discharger, MTBE was analyzed in 57 water quality samples, the median concentration was less than 0.5 µg/L, the average concentration of the detected concentrations was 1.2 µg/L and the highest concentration was 4.1 µg/L. Of the 57 samples, 50 were reported as non-detect (ND). As discussed in the Findings of this Order, the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit for MTBE is 5 µg/L. Discharges from the groundwater treatment system consistently achieve concentrations of MTBE at less than 5 µg/L. The effluent limitation established in the previous Order 98-062 would MTBE to be discharged in concentrations that could cause or threaten to cause an excursion of the MCL for MTBE. Based on the performance of the current treatment technologies to consistently achieve MTBE concentrations in its discharge less than the MCL, this Order has revised the MTBE effluent limitation from 35 µg/L to 5 µg/L to protect water quality. As the Discharger is already meeting the proposed effluent limitations with the technology currently employed, continued proper operation and maintenance of the existing treatment system will achieve these effluent limits and not impose additional costs on the Discharger.

Water Quality-Based Effluent Limitations

Dilution

Fourteen Mile Slough is a dead end, tidally influenced slough. As part of the Eastern Portion of the Delta, Fourteen Mile Slough is listed as impaired for numerous pollutants, including unknown toxicity as noted above. If limited or no dilution is available, effluent limitations may be set equal to the applicable water quality criteria or objectives, which are applied at the point of discharge so the discharge will not cause the receiving water to exceed water quality objectives established to

protect the beneficial uses. In situations where receiving water flows are substantially greater than effluent flows, dilution may be considered in establishing effluent limitations. However, when a receiving water is impaired by a particular pollutant or stressor, limited or no pollutant assimilative capacity may be available in spite of the available dilution. In these instances, and depending upon the nature of the pollutant, effluent limitations may be set equal to or less than the applicable water quality criteria or objectives that are applied at the point of discharge such that the discharge will not cause or contribute to a receiving water excursion above water quality objectives established to protect the beneficial uses. The storm drain outfall which conveys the treated groundwater effluent discharges to Fourteen Mile Slough via the San Joaquin County Storm Pump Station #1 (SJCPS #1). Regional Board staff observed some pooled water but no discernable receiving water flow immediately downgradient in the vicinity of this outfall location during a site visit in November 2004. Further downgradient, staff observed increasing volumes of water in Fourteen Mile Slough, likely under tidal influence. Considering the hydraulic characteristics of the receiving water, results of effluent and ambient receiving water monitoring, and the location of the discharge outfall to Fourteen Mile Slough, the Regional Board has evaluated the need for water quality-based effluent limitations for pollutants without benefit of dilution in this Order. These water quality-based effluent limitations are based on the application of water quality criteria or objectives at the point of discharge. The Discharger may elect to conduct a dilution study to evaluate seasonal or flow-based assimilative capacity of the receiving water for particular pollutants. If requested, the Regional Board will review such studies and if warranted, may reopen this permit to make appropriate changes.

Priority Pollutants

Copper, lead, zinc, DDT, DDE, DDD, and Delta-BHC: Water quality-based effluent limitations for these pollutants have been established for in accordance with Section 1.4 of the SIP. The bases for these limits are provided in detail in the Findings of this Order. All of these pollutants were determined to have a reasonable potential based on background receiving water concentrations exceeding the most restrictive water quality criterion/objective for the receiving waters. Concentrations of these pollutants were less than applicable criterion, however, in accordance with Section 1.3 of the SIP, whenever the background concentration of a pollutant exceeds the most restrictive water quality criterion a water quality-based effluent limit must be established.

Arsenic, chromium VI and mercury: Monitoring data found detectable concentrations of mercury and Chromium VI in the discharge at concentrations determined to have reasonable potential to cause or contribute to an in-stream excursion above a water quality standard. Final effluent limitations were established for mercury and chromium VI in accordance with Section 1.4 of the SIP. The bases for these limits are provided in detail in the Findings of this Order. As discussed below interim effluent limitations and compliance schedules for mercury and chromium VI have been included in this Order. Effluent limitations for arsenic are based on existing Basin Plan objectives that were established prior to 1995. A separate Time Schedule Order shall be proposed for compliance with the arsenic effluent limitations.

Lead: Previous Order 98-062 established a technology-based effluent limit for lead of 5 µg/L (monthly average) and 50 µg/L (daily maximum). Monitoring data provided by the Discharger found concentrations of lead in the background receiving water concentrations exceeding the most restrictive water quality criterion/objective for the receiving waters. In accordance with Section 1.3 of the SIP, whenever the background concentration of a pollutant exceeds the most restrictive water quality criterion a water quality-based effluent limit must be established. The water quality-based effluent limit for lead was more stringent than the technology-based effluent limitations established in the previous order. Therefore, this Order implements the more stringent water quality-based effluent limitations. Final effluent limitations for lead were established in accordance with Section 1.4 of the SIP. The bases for these limits are provided in detail in Findings of this Order.

SIP Revisions: The SWRCB is considering proposed revisions to Section 1.3 Step 6 of the SIP. These revisions include considering monitoring requirements only in lieu of an effluent limitation where a particular pollutant was detected in the background receiving water above an appropriate criterion, but not detected in the effluent. If these revisions to the SIP are adopted by the SWRCB, this Order may be reopened to remove the effluent limitations for copper, zinc, and the organochlorine pesticides DDT, DDE, DDD and Delta-BHC.

Other Pollutants

Barium, iron, manganese, ammonia, and specific conductance: Water quality-based effluent limitations for these pollutants have been established for in accordance with Chapter 5 of the TSD. The bases for these limits are provided in detail in the Findings of this Order. Concentrations of these pollutants in the discharge were determined to have reasonable potential to cause or contribute to an excursion above a water quality standard. Since these limitations have been established based on existing water quality objectives, a schedule of compliance is not included in this Order. A separate Time Schedule Order shall be proposed for compliance with these pollutant effluent limitations.

Water Quality-Based Effluent Limitation Calculation Examples

Using copper as an example, the following demonstrates how water quality based effluent limits were established for this Order. The process for developing these limits is in accordance with the steady state model described by Section 1.4 of the SIP and Chapter 5 of the TSD.

Step 1: For each pollutant requiring an effluent limit (in accordance with Section 1.3), identify the applicable water quality criteria or objective. For each criteria determine the effluent concentration allowance (ECA) using the following steady state equation:

$ECA = C + D(C-B)$ when $C > B$, and
$ECA = C$ When $C \leq B$,

Where C = The priority pollutant criterion/objective, adjusted if necessary for hardness, pH and translators. In this Order a hardness value of 58 mg/L (as $CaCO_3$) was used for development of hardness-dependant criteria (minimum observed receiving water hardness)
D = The dilution credit, and
B = The ambient background concentration

The maximum ambient background concentration exceeded the pollutant criterion; therefore:

ECA = C

For copper the applicable water quality criteria are (reference Table 1):

ECA_{acute}= 8.4 µg/L
$ECA_{chronic}$= 5.9 µg/L
$ECA_{human\ health}$= 1000 µg/L

Step 2: For each ECA based on aquatic life criterion/objective, determine the long-term average discharge condition (LTA) by multiplying the ECA by a factor (multiplier). The multiplier is a statistically based factor that adjusts the ECA to account for effluent variability. The value of the multiplier varies depending on the coefficient of variation (CV) of the data set and whether it is an acute or chronic criterion/objective. Table 1 of the SIP and Table 5-1 of the TSD provide pre-calculated values for the multipliers based on the value of the CV. Equations to develop the multipliers in place of using values in the tables are provided in Section 1.4, Step 3 of the SIP and in Table 5-1 of the TSD and will not be repeated here.

$LTA_{acute} = ECA_{acute} \times Multiplier_{acute}$

$LTA_{chronic} = ECA_{chronic} \times Multiplier_{chronic}$

The CV for the data set must be determined before the multipliers can be selected and will vary depending on the number of samples and the standard deviation of a data set. If the data set is less than 10 samples, or at least 80% of the samples in the data set are reported as non-detect, the CV shall be set equal to 0.6.

For copper, the following data was used to develop the acute and chronic LTA using Table 1 of the SIP:

No. of Samples	CV	$Multiplier_{acute}$	$Multiplier_{chronic}$
< 10	0.6	0.321	0.527

LTA_{acute} = 8.4 µg/L x 0.321 = 2.7 µg/L

$LTA_{chronic}$ = 5.9 µg/L x 0.527 = 3.1 µg/L

Step 3: Select the most limiting (lowest) of the LTA.

LTA = most limiting of LTA_{acute} or $LTA_{chronic}$

For copper, the most limiting LTA was the LTA_{acute}

LTA = 2.7 µg/L

Step 4: Calculate the water quality based effluent limits by multiplying the LTA by a factor (multiplier). Water quality-based effluent limits are expressed as Average Monthly Effluent Limitations (AMEL) and Maximum Daily Effluent Limitation (MDEL). The multiplier is a statistically based factor that adjusts the LTA for the averaging periods and exceedance frequencies of the criteria/objectives and the effluent limitations. The value of the multiplier varies depending on the probability basis, the coefficient of variation (CV) of the data set, the number of samples (for AMEL) and whether it is monthly or daily limit. Table 2 of the SIP and Table 5-2 of the TSD provide pre-calculated values for the multipliers based on the value of the CV and the number of samples. Equations to develop the multipliers in place of using values in the tables are provided in Section 1.4, Step 5 of the SIP and in Table 5-2 of the TSD and will not be repeated here.

$AMEL_{aquatic\ life} = LTA \times AMEL_{multiplier}$

$MDEL_{aquatic\ life} = LTA \times MDEL_{multiplier}$

AMEL multipliers are based on a 95th percentile occurrence probability, and the MDEL multipliers are based on the 99th percentile occurrence probability. If the number of samples is less than four (4), the default number of samples to be used is four (4).

For copper, the following data was used to develop the AMEL and MDEL for aquatic life using Table 2 of the SIP:

No. of Samples	CV	$Multiplier_{MDEL}$	$Multiplier_{AMEL}$
4	0.6	3.11	1.55

$AMEL_{aquatic\ life}$ = 2.7 x 1.55 = 4.2 µg/L

$MDEL_{aquatic\ life}$ = 2.7 x 3.11 = 8.4 µg/L

For chromium VI considering the acute water quality criterion (reference Table 1):

ECA_{acute}= 16 µg/L

For the acute ECA based on aquatic life criterion/objective, develop the acute LTA using Table 1 of the SIP:

No. of Samples	CV	$Multiplier_{acute}$	$Multiplier_{chronic}$
< 10	0.6	0.321	0.527

LTA_{acute} = 16 µg/L x 0.321 = 5.1 µg/L

Calculate the water quality based effluent limits by multiplying the LTA by a factor (multiplier):

$AMEL_{aquatic\ life} = LTA \times AMEL_{multiplier}$

$MDEL_{aquatic\ life} = LTA \times MDEL_{multiplier}$

AMEL multipliers are based on a 95th percentile occurrence probability, and the MDEL multipliers are based on the 99th percentile occurrence probability. If the number of samples is less than four (4), the default number of samples to be used is four (4).

For chromium VI, the following data was used to develop the AMEL and MDEL for aquatic life using Table 2 of the SIP:

No. of Samples	CV	$Multiplier_{MDEL}$	$Multiplier_{AMEL}$
4	0.6	3.11	1.55

$AMEL_{aquatic\ life}$ = 5.1 x 1.55 = 8.0 µg/L

$MDEL_{aquatic\ life}$ = 5.1 x 3.11 = 15.9 µg/L

For lead the applicable water quality criteria are (reference Table 1):

ECA_{acute}= 1.6 µg/L
$ECA_{chronic}$= 41 µg/L

For each ECA based on aquatic life criterion/objective, determine the long-term average discharge condition (LTA) by multiplying the ECA by a factor (multiplier).

$LTA_{acute} = ECA_{acute} \times Multiplier_{acute}$

$LTA_{chronic} = ECA_{chronic} \times Multiplier_{chronic}$

For lead, the following data was used to develop the acute and chronic LTA using Table 1 of the SIP:

No. of Samples	CV	$Multiplier_{acute}$	$Multiplier_{chronic}$
< 10	0.6	0.321	0.527

LTA_{acute} = 41 µg/L x 0.321 = 13.2 µg/L

$LTA_{chronic}$ = 1.6 µg/L x 0.527 = 0.84 µg/L

For lead, the most limiting LTA was the $LTA_{chronic}$

LTA = 0.84 µg/L

Calculate the water quality based effluent limits by multiplying the LTA by a factor (multiplier):

For lead, the following data was used to develop the AMEL and MDEL for aquatic life using Table 2 of the SIP:

No. of Samples	CV	$Multiplier_{MDEL}$	$Multiplier_{AMEL}$
4	0.6	3.11	1.55

$AMEL_{aquatic\ life}$ = 0.84 x 1.55 = 1.3 µg/L

$MDEL_{aquatic\ life}$ = 0.84 x 3.11 = 2.6 µg/L

For zinc the applicable water quality criteria are (reference Table 1):

ECA_{acute}= 76 µg/L
$ECA_{chronic}$= 76 µg/L

For each ECA based on aquatic life criterion/objective, determine the long-term average discharge condition (LTA) by multiplying the ECA by a factor (multiplier).

$LTA_{acute} = ECA_{acute}$ x $Multiplier_{acute}$

$LTA_{chronic} = ECA_{chronic}$ x $Multiplier_{chronic}$

For zinc, the following data was used to develop the acute and chronic LTA using Table 1 of the SIP:

No. of Samples	CV	$Multiplier_{acute}$	$Multiplier_{chronic}$
< 10	0.6	0.321	0.527

LTA_{acute} = 76 µg/L x 0.321 = 24.4 µg/L

$LTA_{chronic}$= 76 µg/L x 0.527 = 40.1 µg/L

For zinc, the most limiting LTA was the $LTA_{chronic}$

LTA = 24.4 µg/L

Calculate the water quality based effluent limits by multiplying the LTA by a factor (multiplier):

For zinc, the following data was used to develop the AMEL and MDEL for aquatic life using Table 2 of the SIP:

No. of Samples	CV	$Multiplier_{MDEL}$	$Multiplier_{AMEL}$
4	0.6	3.11	1.55

$AMEL_{aquatic\ life}$ = 24.4 x 1.55 = 38 µg/L

$MDEL_{aquatic\ life}$ = 24.4 x 3.11 = 76 µg/L

Interim Effluent Limitations

As discussed above under Water Quality-Based Effluent Limitations, copper, zinc, lead, DDT, DDE, DDD, and delta-BHC are new limitations in this Order based on the condition of the receiving water. These pollutants were not detected in effluent samples in concentrations that could cause or contribute to an excursion above an in-stream water quality standard. Therefore, the Discharger is expected to be able to comply with final limitations upon adoption of this Order. Interim limits and a compliance schedule for these pollutants are not justified and are not included in this Order.

New effluent limitations for chromium VI and mercury based on CTR criteria have been included in this Order. These constituents were detected in the discharge in concentrations that have reasonable potential to cause or contribute to an excursion of a water quality standard. For chromium VI the interim limit was established using the methodology discussed in Finding 48 of this Order as summarized below:

Constituent	N	Maximum Detected Concentration	Interim Limit Multiplier	Interim Daily Maximum Limit	Interim Mass-based Limitation[1]
Chromium VI	4	17 ug/L	4.7	80 ug/L	0.29 pounds/day

[1] Based on design flow rate of 0.43 mgd

At Section 2.1.1 the SIP states: "For bioaccumulative priority pollutants for which the receiving water has been included on the CWA Section 303(d) list, the RWQCB should consider whether the mass loading of the bioaccumulative pollutant(s) should be limited to representative, current levels pending TMDL development in order to implement the applicable water quality standard". Since mercury is a bioaccumulative pollutant included on the CWA 303(d) list for the Delta, the intent of this Order is to include an interim performance based effluent limitation for mercury.

Current mercury data are not sufficient for establishment of an interim performance based limitation. This Order requires the Discharger to collect data necessary to establish an interim performance based effluent mass limitation.

Performance-based effluent limits for mercury are typically established as follows: 1) The average monthly effluent mercury concentration is calculated by adding all detected concentrations and one-half of the reported detection levels of all non-detectable mercury concentration results; 2) From the average monthly mercury concentration and average monthly flow, a monthly mercury mass discharge is calculated; and 3) A total mass for all months is then totaled, and an average annual mass discharge is calculated.

Following the establishment of the interim limit, the mass of mercury discharged shall not exceed the interim mercury mass limit twelve months on a running average. In calculating for compliance, the Discharger shall count all non-detect measures at one-half of the detection level and apply the monthly average flow from the sampled discharge. If compliance with the effluent limit is not attained due to the non-detect contribution, the Discharger will be directed to improve and implement available analytical capabilities and compliance will be evaluated with consideration of the detection limits. For each calendar month, the Discharger shall calculate twelve-month mass loadings. For monthly measures, monthly loadings shall be calculated using the average monthly flow and the average of all mercury analyses conducted that month. The Discharger shall submit a cumulative total of mass loadings for the previous twelve months with each self-monitoring report. Compliance will be determined based on the previous 12-month moving averages over the previous twelve months of monitoring.

The SIP, Section 1.3, requires the establishment of an effluent limitation for a constituent when the MEC and/or the maximum observed ambient background concentrations exceed an applicable criterion or objective. This Order contains a final MDEL and AMEL for mercury based on the CTR human health criterion of 0.050 µg/L. This Order may be reopened, and alternative final effluent limitations may be established for mercury upon completion of the TMDL, or promulgation of new criteria.

Upon completion of the Interim Mercury Mass Limitation Study required by this Order, this Order shall be reopened and an interim performance based mercury mass effluent limitation established.

RECEIVING WATER LIMITATIONS

The groundwater treatment system discharges to a storm drain system owned by San Joaquin County that discharges to the Fourteen-Mile Slough a waterbody within the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. The Regional Board adopted a *Water Quality Control Plan*, *Fourth Edition, for the Sacramento and San Joaquin River Basins* (hereafter Basin Plan). The Basin Plan establishes water quality objectives that apply to all surface waters in the Delta. This Order includes Receiving Water Limitations for: bacteria, biostimulatory substances, color, floating material, oil and grease, pH, pesticides, radioactivity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, turbidity, chloride, electrical conductivity, and dissolved oxygen based on the applicable narrative and numeric water quality objectives contained in Basin Plan for the Delta.

SPECIAL STUDIES

This Order requires the discharger to conduct special monitoring studies for Bis (2-Ethylhexl)Phthalate (DEHP). In monitoring data provided by the Discharger DEHP was not in detectable concentrations in the discharge and was detected in only one of four samples of the background receiving water of 2.9 µg/L. This exceeds the applicable, most restrictive CTR human health criteria for DEHP of 1.8 µg/L. Because DEHP is a common contaminant of sample containers, sampling apparatus, and analytical equipment, and sources of the detected DEHP may be from plastics used for sampling or analytical equipment, the Regional Board is not establishing effluent limitations for DEHP at this time. The Regional Board is directing the discharger to conduct a study to determine if DEHP is present in the receiving water, and if it is, if it above the water quality criterion for DEHP. This Order includes a reopener to allow the Regional Board to incorporate appropriate effluent limitations for DEHP if needed pending the results of this study.

BASIS FOR MONITORING REQUIREMENTS

Section 308 of the CWA and 40 CFR 122.44 (i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality. The Discharger is responsible for conducting monitoring and for reporting the results to the USEPA using Discharge Monitoring Reports. The self-monitoring program requires monitoring of the influent, effluent and receiving water.

This Order continues the influent, effluent and three species chronic toxicity monitoring from the previous Order 98-062. Monitoring requirements for the treatment performance evaluation monitoring were not continued as they were intended only for the initial startup of the treatment system. Instead this Order establishes more frequent monitoring of the influent and effluent if the treatment system has a scheduled or unscheduled shutdown that lasts longer than 72 hours or which could result in noncompliance on startup regardless of the downtime.